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ANNUAL SUMMARY

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PART — B

SNOWFALL

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I N D I A W E A T H E R R E V I E W 1968

ANNUAL SUMMARY - PART - B

S N O W F A L L

This part contains a summary of the reports of snowfall in the mountain regions to the north of India based on (a) records of snowfall observations made at the observatories and (b) reports collected by local officers from the local residents, headmen of villages or from travellers who had passed through the region, and then transmitted to this office.

The amount of snowfall is usually measured by finding the depth of undisturbed snow lying on the ground. The measurements are given in metres or centimetres. At places provided with raingauges the snow collected in the gauge is melted and measured as rain. The heights of well-known passes/peaks are reported to the nearest metre, wherever available, while the heights of mountain ranges, etc. are reported in tens of metres. In the description, the figures given for depths of snowfall for a month indicate the total amount of snowfall which occurred during that month.

Winter Period - January & February

I - JAMMU AND KASHMIR

SRINAGAR DISTRICT

Srinagar (1585 m.) - A couple of heavy falls with intermittent light snow were reported for January. Total precipitation recorded was 67.0 mm. The lowest level to which snowline descended was about 1524 m. The snowfall was normal for January.

In February, total precipitation recorded at the station was 35.3 mm and it was below normal.

Accumulation on the surrounding passes and mountain tops was reported to be quite heavy.

BARAMULLAH DISTRICT

Gulmarg (2652 m.) - Snowfalls were observed on 13 days in January and were reported to have occurred all over the area including mountain tops of Handibal and Apharwat. Total precipitation was 130.3 mm.

In February, similarly, six days in the month had snowfall and total precipitation was reported as 107.1 mm. Accumulation of snow was reported to be about 1.8 m.

The snowfall was above normal in January and February.

DODA DISTRICT

Patnitop (Batote) (2033 m.) - Snowfalls were reported as under :-

9th - 10th	January	- 61 cm. depth on Patnitop and Sansar peaks (started with heavy rain).
20th/21st	January	- Started with light snow and depth on Patnitop range was about 122 cm.

26th/28th January - Started with snow, depth reported was 137 cm. on Patnitop, Doda Hills, Sansar Peaks and Troate, Damkund Hills.

The snowfall during the month was above normal.

5th/ 6th February - Started with heavy continuous rain, depth 30 cm. on Patnitop, Sansar and Mahavud Hills.

12th/13th & 20th/21st February - Depth not reported.

The snowfall was considered normal for February.

LADAKH DISTRICT

Kargil (2679 m.) - Snow to a depth of 1 m. was estimated on the passes in January. In February the peaks of Zozilah, Shandoric etc. received ½ to 1 m. snow.

The snowfall was above normal in January and February.

Leh (3514 m.) - Snowfall at the station was recorded as 5 cm on 28th January, while it was reported as 1.2 m. on passes and peaks at heights ranging from 5500 - 6100 m.

The snowfall may be taken as above normal.

In February, at the station total snowfall was reported as 10 cm. whereas on the passes and peaks at heights of 5500 - 6100 m. it was estimated to be 1 to 1.5 m. deep.

The snowfall was much above normal.

Khangral - In January, snow fell 3 times to a depth of 17.8 cm and in February 4 times to the depth of 34.3 cm.

The snowfall was above normal in both the months.

Snow Accumulation

Place	January	February
Namikala	0.9 m	0.9 m
Fotula	1.2 m	0.6 m

ANANTANAG DISTRICT

Quzigund (1690 m.) - Snowfalls occurred on 12 days in January with intensity varying from light to heavy and accumulation of snow was about 3 m in depth.

Snowfalls were reported on twelve occasions in February with light to heavy intensities, sometimes accompanied by rain.

Accumulation was about 1.8 m. in depth.

The snowfall was above normal in January and February.

II - PUNJAB AND HIMACHAL PRADESH

CHAMBA DISTRICT

Following statement gives the information on snowfall in January and February.

Station	Height a.s.l. in metres	Dates of occurrence of snow-fall	Depth of snowfall at station Total	Depth of snowfall on well-known passes	Lowest height of snow-line in metres
		JANUARY			
Chamba	924	6,7,8,10, 11,13,21, 25 & 27 to 31	45.7 cm	30 cm	914
Chhatrahri	1793	11,13,21, 28,29 & 31	1.32 m	1.2 m	1768
Bhandal	1730	6,7,11,12, 13,21,25, 27 to 31	2.05 m	1.3 m	1707
Chowari	1021	-	-	5 cm	1829
Bathri	1372	27 to 29	15.2 cm	90 cm	1372
Kala Top	2414	5 to 7, 9, 10,12,20, 24,26 to 30	4.6 m	1.5 m	2134
Bharmaur	2155	6,7,10,13, 21,27 to 31	2.7 m	2.2 m	2134
Tissa	1570	13,21,25,28, 29,31	1.5 m	1.8 m	1570
Bhanouta	1[illegible]	27 to 29	15.2 cm	40 cm	1069
Kilar	2564	6,7,21, 26 to 29, 31	90 cm	2.1 m	2560
		FEBRUARY			
Chamba	924	6,7,14,15, 19 to 21, 27, 28	90 cm	2.4 m	914

Station	Height a.s.l. in metres	Dates of occurrence of snow-fall	Depth of Snowfall at station Total	Depth of snowfall on well-known passes	Lowest height of snow-line in metres
		FEBRUARY			
Chhatrahri	1793	6,8,10,19, 20,27	41 cm	2.3 m	1792
Bhandal	1730	6,7,14,15, 21	41 cm	2.4 m	1707
Chowari	1021	-	-	2.1 m	-
Bathri	1372	-	-	1.8 m	-
Kala Top	2414	5 to 7,13, 14,16,19,20, 26,27	1.8 m	2.1 m	1829
Bharmaur	2155	5,6,11,18-20, 26 to 28	82.5 cm	2.3 m	1829
Tissa	1570	6,7,21	22.9 cm	2.3 m	1524
Bhanouta	1967	-	-	1.8 m	-
Kilar	2564	6,7,14,20, 27,28	1.9 m	2.3 m	2438

Snow accumulations were as follows on the passes :-

Name of Pass	Depth of snow accumulation in m	
	January	February
Sach	2.1	2.4
Drati	2.2	2.6
Kalichho	2.0	2.3
Padhri	1.7	2.3
Basodan	0.9	2.4

The snowfall was above normal both in January and in February.

UPPER CHAMBA RANGE

Snowfall to a depth of 3.7 m was reported on high peaks like Kankote, Sakrew and Baliani during January and to a depth of 4.0 m in February.

Snow accumulations were as under :-

Name of Peak	January	February
Baliani	7.6 m	7.6 m
Kankote	5.5 m	5.8 m
Sakrew	5.5 m	6.1 m

The snowfall was above normal in January and much above normal in February.

Dalhousie (1959 m.) - Snowfall occurred on 10 days in January, the heaviest recorded being 76.2 cm. and the total being 3.4 m.

The snowfall was above normal for the month.

In February, 4 days had snowfall, total being 35.6 cm. Heaviest on a day was 10.2 cm.

The snowfall was below normal in February.

MAHASU DISTRICT

Chopal (2342 m.) - There had been 7 days of snow in January with a total fall of 1.27 m. The heaviest snow occurred on 29th, the depth recorded being 53.3 cm.

The depth of snow on Chur Dhar peak varied from 0.8 m to 2.1 m.

The snowfall was much above normal in January.

February witnessed 4 days of snow, with a total depth of 45.7 cm. The heaviest fall was occurred on 20th, its depth reaching 22.9 cm.

Chur Dhar Peak had a snow cover of 2.4 to 3.2 m. in depth.

The snowfall was normal for the month.

Rampur (1067 m.) - There had been snowfall on 9 days in the month of January. Snowline descended to 1219 m. Widespread snow occurred in the Tehsil on 30th.

Accumulation on high peaks, such as Daranghati, was estimated at 1.4 m.

In February, there had been snowfall on 7 days and the snowline descended to 1524 m.

Snow accumulation on peaks, like Daranghati, was estimated at 0.8 m.

The snowfall was above normal in both the months.

Kumarsain (1388 m.) - The snowfall and accumulation during January and February were as follows:-

Name of Place	Snowfall		Accumulation	
	January	February	January	February
Kumarsain	27.9 cm	-	20.3 cm	-
Narkanda	1.7 m.	22.9 cm	1.8 m.	1.5 m.
Hatu	2.3 m.	45.7 cm	2.7 m.	2.4 m.
Thanadhar	1.1 m.	10.2 cm	0.9 m.	0.6 m.

The snowfall was above normal in both the months.

MANDI DISTRICT

Barot - There were 8 days of snowfall in January, total depth of snow being 85.9 cm.

In February, there were 5 snow-days with a total snowfall of 23.0 cm.

Snow accumulation at the end of the season was 53.3 cm at Heaw Gear (R.L.8300), while at Barot it was nil.

The snowfall reported was above normal for the period.

KINNAUR DISTRICT

Kilba Range

Kilba (1829 m.) - Snow fell on 8 days in January. The total depth was 1.1 m. There were 3 days on snow in February and the depth reported was 36.8 cm.

Snowfall was normal in January and February.

Sangla (2591 m.) - Snow fell on 11 days in January and on 7 days in February. The depths were 1.4 m. and 1.5 m. respectively.

The snowfall was normal in January and much above normal in February.

POOH FOREST RANGE

Pooh - 9 days of snow with a total of 573.8 mm and a heaviest fall of 228.6 mm were reported in January. In February, 5 days had snowfall, heaviest fall being of 355.6 mm and the total 1085.2 mm.

Namgia - Total snowfall in January was 594.8 mm with heaviest reported being 235.7 mm on 27th. In all, snow days were nine. In February, the total amount was 1270.0 mm and heaviest was 355.6 mm on 28th. 5 days had snowfall during this month.

Giabong - January snowfall was 73 mm and February 1872.1 mm; the heaviest being on 28th February. Number of snow days was 4 and 5 in January and in February respectively.

Lahoul Range (Udai Pur)

There were 7 days of snowfall in January. The total depth of snow was 2.7 m, the heaviest reported being 1.8 m on 29th.

Report for February was not received.

SIMLA DISTRICT

Simla (2202 m.) - In Simla proper, there was snowfall on 6 days in January. About 61.0 to 68.6 cm of snow was reported on6th on mountain peaks in the district and heavy snowfall of nearly the depth of 1.5 to 2.0 m was reported during 27th to 30th on the peaks of Solan, Simla, Kasauli, etc.

As the report goes, snowfall occurred on 6 days in February in the district, amounts varying from 2.5 cm. to 45.7 cm. The snowfall appeared to be above normal in January while that in February normal.

III - UTTAR PRADESH

DEHRA DUN DISTRICT

Mussoorie (2042 m.) - The station surrounded by hills experienced snowfall on 9 days in January, total depth reported being 1.1 m.

The snowfall was above normal.

In February, snowfall was reported on 2 days only, but the amount was not given.

UTTAR KASHI DISTRICT

Rajgarhi Tehsil - Rajgarhi, situated approximately 1829 m. a.s.l., had 4 days of snowfall in January with a total of 35.6 cm. Report for February was not received.

In the region of Bandar Punch (Peak height 6310 m.) range, snowline reportedly descended to 3050 m.

Dunda (1036 m.) - No snowfall at the station. Reports from Patwaris said that it occurred upto the height of 1220 m. which was about 2.5 cm. Heaviest snowfall of 46 cm. was reported from Raui at a height of 2073 m.

The snowfall was reported below normal for January.

Purola Tehsil - There was snowfall on 2 days in January with a total of 17.8 cm. The snowfall was considered to be above normal.

Accumulation of snow was reported to be 8 to 10 cm at Purola by January end. The report for February was not received.

Bhatwari Tehsil - Bhatwari, at a height of 1585 m. a.s.l., experienced snow on 5 days in January, the total amount being 63.5 cm.

Snowline around Bhagirath peaks, the highest in this area with an altitude of about 6100 m., descended to a level of 3050 m. in January. Report for February was not received.

TEHRI GARHWAL DISTRICT

Peshkari Dhanotli - In January, there was snowfall on 4 days at places such as Dhanotli, Nag Tibba, Surkhanda and Kempty with altitude ranging from 1500 to 2100 m. The depths varied from 0.45 m. to 1.2 m.

Snowfall was normal in January.

Snow accumulation was about 0.6 m. at Dhanotli and at higher peaks like Nag Tibba and Surkhanda.

The report for February was not received.

Mukhim (1981 m.) - There was snowfall on 2 occasions in January. The total amount wa 28.4 mm.

In February, snowfall occurred on 20th. The amount was 17.8 cm.

ALMORA DISTRICT

Snowfall and accumulation were as under at Patti Malla Danpur :-

Name of Peak	Depth of Snowfall		Accumulation	
	January	February	January	February
	(in metres)			
Kautela	2.0	1.8	1.8	1.8
Kafina	1.9	1.8	1.9	1.8
Bankatia	4.0	3.0	2.7	2.7
Nana Devi	3.7	2.7	2.9	2.9
Pindar	2.9	2.4	2.9	2.9
Sunderdhunga	3.5	2.7	2.9	2.9

The snowfall was normal in both the months.

NAINITAL DISTRICT

Mukteswar (2310 m.)

Snowfall was experienced on 9 days in January. Total depth for the period w 91 cm. On 30th the snowfall extended to surrounding high peaks viz. Gogarh, Naina, Ramgarh as well as the valleys such as Almora, Nainital etc. On the other days, it confined to the high peaks only.

The snowfall for January was much above normal.

Snowfall occurred on three days in February. The total depth of snowfall w 15.2 cm. The snowfall was normal for February.

Nainital (1953 m.) - There was snowfall on 6 days in January. Total depth was 91.4 Snow accumulation on hill tops was 76.2 cm. and 30.5 cm. in low-lying areas. The s fall was above normal in January.

In February, there was snowfall on 2 days. On China peak and Snow View the was 30.5 cm., while in low lying areas it was 15.2 cm. Snow accumulations of the s amounts were reported for both the places. Snowfall was normal for February.

PITHORGARH DISTRICT

Tahsil Didihat - Snowfall reported for January at various places was as follows :-

S.No.	Name of Place/ Peak	Height in Metres	Depth of snow in Cm.
1.	Didihat	1585	7.6
2.	Deochula	1981	12.7
3.	Janrashi Jumdi	1524	15.2
4.	Dhandhura	2134	15.2
5.	Sigali	1524	5.1
6.	Dhuraj	2134	17.8
7.	Kandalichhina	1829	7.6
8.	Berinag	1524	7.6
9.	Chankadi	1829	10.2
10.	Kalinag	2134	17.8
11.	Sata	1829	5.1
12.	Bhatur	1676	3.8
13.	Mayurnagar	1524	2.5
14.	Chaubati	1463	2.5
15.	Bhubaneshwar	1372	5.1

Taken as an average for the whole tehsil, the depth of snow was 9.1 cm. The snowfall was said to be above normal for the month.

The report for February was not received.

Tehsil Pithorgarh

Following were the reported snowfalls in the tehsil for January :-

Place	Height in Metres (Approx.)	Snowfall depth in cm.
Thalkedar (Patti Talla Waldia)	2134	91
Dwaj (Patti Kharayat)	2134	76
Sau Lakh (Patti Kharayat)	1981	76
Hunpani (Patti Malla Waldia)	1920	76
Dyari Dhura (Patti Bhirang)	1981	76
Sweel (Patti Del)	1981	76
Pithoragarh	1676	30
	Total	501 cm.

Average depth of snow over the tehsil was 72 cm. The snowfall was reported as a record since 1945 and may, therefore, be taken as much above normal.

No snowfall was reported for February.

Tehsil Dharchula - Snowfall reported for the season was 5 to 90 cm. on an average for regions below 2130 m. and 5 cm. to 14 m. for those above 2130 m.

The snowfall was much above normal for the season.

Snow accumulation on 7th February was :-

Limpia Pass	14 m.
Chhipla Peak	3.6 m
Lipu pass	10.5 m.

Pre-Monsoon Period - March to May

I - JAMMU AND KASHMIR

SRINAGAR DISTRICT

Srinagar (1585 m.) - The snowfall was observed on surrounding hills. Total precipitation recorded was 101 mm. which was below normal for the month of March.

There was snowfall on high mountains only in April. Total precipitation recorded was 97.4 mm and it was below normal.

Snowfall occurred only on very high passes and peaks in May. Total precipitation recorded was 45.2 mm and it was below normal.

Accumulation on well known passes and peaks was reported to be above normal.

BARAMULLAH DISTRICT

Gulmarg (2652 m.) - In March, there was snowfall on 10 days all over the area including mountain tops of Handiball and Apharwat. Total precipitation recorded was 126.6 mm. Snow accumulation was about 0.6 m.

The snowfall was above normal in March.

Twelve days of snowfall were reported in April. Out of these, on 8 days there was snowfall on the mountains of Handibal and Apharwat. On the remaining 4 days the whole area experienced snowfall. Accumulation of snow was about 1.5 m. on Afarwat mountain. Total precipitation was 162.3 mm which was above normal.

On 20 days in May there was snowfall on Handibal and Apharwat mountains and on 3 days over the whole area. Total precipitation was 210.8 mm. The snowfall and accumulation were above normal during the month. Snow accumulation was 1.2 m. on Apharwat and Handibal mountains.

DODA DISTRICT

Patnitop (2033 m.) - Snowfall was observed on nearby mountain tops and ranges on 27th and 28th of March. 5 to 8 cm of snow accumulation remained on peaks of Sansar, Troata and Patnitop at the end of the month. The snowfall was normal.

There was no snowfall in April and May. But snow was observed on Narota and Sansar range peaks. The snow accumulation was reported to be below normal for May.

LADAKH DISTRICT

Leh (3514 m.) - There was snowfall at the heights of 4200 to 5500 m on the 7th and 26th of March. The amount was 101.6 mm. No snow occurred at the station. Snow accumulation was 1.2 to 1.5 m at the heights of 5500-6100 m. The snowfall was below normal in March.

No snow fell at the station in April. About 15 cm of snow was reported at the heights of 5500-6100 m and 1.5 m on the passes. The snowfall was below normal in April.

The month of May witnessed about 101.6 mm of snowfall at the station. At the heights of 5500-6100 m the depth of snow was about 30 cm. and in the passes about 1.8 m. The snowfall was below normal in the month. The accumulation of 1.8 m of snow on the passes was reported to be above normal.

Khangral - There was snowfall on three days in March, the depth reported being 15 cm. At fotula pass 0.6 m and at Nomikala 15 cm of snow was reported. The snowfall was normal in March.

Reports for April and May were not received.

ANANTNAG DISTRICT

Quzigund (1690 m.) - It snowed several times on the peaks. Precipitation at the station was 118.5 mm in March. Accumulation was reported as maximum on the high passes and peaks.

No snowfall occurred during April and May.

Banihal (1624 m.) - During May, accumulation on Eastern Pirpanjal range was more than that of last year.

Reports for March and April were not received.

II - PUNJAB AND HIMACHAL PRADESH

CHAMBA DISTRICT

Snowfall during March, April and May was as follows :-

Station	Height a.s.l. in m.	Dates of occurrence	Depth of snowfall at station total	Depth of snowfall on well-known passes	Lowest height of snowline in metres
		MARCH			
Chamba	924	-	-	1.2 m	2134
Bhandal	1730	27	1.3 cm	1.8 m	1676
Chowari	1021	-	--	30 cm	-
Kala Top	2414	19,20	30 cm	60 cm	2408
Bharmaur	2155	19,20,27	27.9 cm	1.8 m	2134
Tissa	1570	-	-	2.1 m	2438
Bhanouta	1069	-	-	1.2 m	-
Kilar	2564	11,19,20, 21,26,27, 28	1.5 cm	2.1 m	2560
		APRIL			
Chamba	924	-	-	1.2 m	2743

Station	Height a.s.l. in m.	Dates of occurrence	Depth of snowfall at station total	Depth of snowfall on well-known passes	Lowest height of snowline in metres
		APRIL			
Chamba	924	-	-	1.2 m	2743
Bhandal	1730	-	-	1.2 m	-
Chowari	1021	-	-	1.2 m	-
Bharmaur	2155	3	7.5 cm	1.8 m	2155
Tissa	1570	-	-	1.8 m	2896
Killar	2564	4,8,14,15	35.6 cm	2.1 m	2560
		MAY			
Bhandal	1730	-	-	1.2 m	2743
Bharmaur	2155	-	-	1.8 m	320
Tissa	1570	-	-	1.5 m	3353
Kilar	2564	4,7	20.3 cm	1.8 m	2560

Snow accumulation was as follows:

Name of Pass	Snow accumulations in metres		
	March	April	May
Sach Pass	2.1	1.8	1.8
Drati	2.1	2.1	2.1
Kali Chho	2.1	1.8	1.8
Padhri	1.8	1.2	1.2
Basodan	1.2	0.9	0.9

The snowfall was below normal in March, and above normal in April and May.

Tissa Range

Repeated snowfalls (and hail storms) were reported in May at higher altitudes.

Accumulation on Chaini Pass was reported as 6.1 - 6.7 m. approximately at the end of the month and was said to be above normal for the period.

Reports for March and April were not received.

Tikri Range

The total accumulation of snow on Mahasu and Darati passes at the end of May was approximately 2.1 - 3.7 m which had been reported as above normal.

Reports for March and April were not received.

Lower Chamba Range

Four snowfalls were reported in May and the accumulation on Munda and Lortghar passes was 2 metres in depth.

The snowfall was reported as more than average.

Reports for March and April were not received.

Bhandal Range

About 2.5 cm of snowfall was experienced in the passes in May. Accumulation was about 2.4 m.

Reports for March and April were not received.

Pangi Forest Division

In May snow accumulation was reported as follows:

1. Chani Pass .... 0.9 m.
2. Bihali Pass ... 1.2 m.
3. Marru Pass ... 3.7 - 4.6 m.
4. Chobia Pass ... 6.1 - 7.6 m.
5. Urgos Pass ... 4.6 - 6.1 m.
6. Gurdhar Pass .. 6.1 - 7.6 m.

Reports for March and April were not received.

Upper Chamba Range

Snowfall and accumulation during March and April were as follows:-

Name of Peak	Snowfall/(No. of days)		Accumulation	
	March	April	March	April
Kankot	1.2 m. (2)	30 cm. (2)	2.7 m.	7.6 cm.
Screw	1.2 m (2)	30 cm. (2)	3.1 m.	10.2 cm.
Baliani	1.2 m. (2)	30 cm. (2)	3.7 m.	12.7 cm.

The snowfall was above normal in March and April.

Report for May was not received.

Dalhousie (1959 m.)

There was 5 cm of snowfall on a single day in March.

April and May had no snowfall.

The snowfall in March was much below normal.

Trehta Range

Snowfall in March was reported from 3 places viz. Holi, Chaunota and Ulausa as follows:-

Holi	...	25.0 cm (3 days)
Chaunota		22.9 cm (4 days)
Ulausa	..	40.6 cm (2 days)

No snowfall occurred in April. Report for May was not received.

The snowfall was above normal in March and below normal in April.

Bharmaur Range

Bharmaur (2155 m.)

Snowfall was 40 cm in March, 7.5 cm in April and 6.5 cm in May. It was below normal.

Lahaul Range - Udai Pur

Snowfall occurred on five days each in March and April, the amounts reported being 1.1 m. and 32.5 cm. respectively.

MAHASU DISTRICT

Chopal (2342 m.)

No snow fell during all the three months March to May.

Average accumulation on Chur Dhar Peak was reported to be 10-15 cm in March.

The snowfall during the period was below normal.

Rampur (1067 m.)

Three days in March had snowfall; however amount was not reported. The snowline had descended to 1500 m. approximately.

Accumulation on high peaks, such as Daranghati was estimated as 25 cm.

There was no snowfall in April and May.

Solan (1530 m.)

No snowfall occurred in April and May, which is normal. Report for March was not received.

SIMLA DISTRICT

Simla (2202 m.)

Snowfall reported for March was 3[illegible] cm on 20th. No snow occurred in April and May.

The snowfall in March was slightly below normal.

KINNAUR DISTRICT

Kilba Range - Kilba (1829 m.)

Reports for March and April were not received. May had no snowfall. This was below normal.

Pooh Range

During March to May, the snowfalls were as follow:

Station	Snowfall (mm)		
	March	April	May
Pooh	455.8	152.4	No snowfall
Namgia	416.5	127.0	
Giabong	455.8	127.0	

III - UTTAR PRADESH

TEHRI-GARHWAL DISTRICT

As reported by the observatory at Mukhim and district authority, there had been no snowfall throughout the period in the district.

The snowfall was below normal for March and April and normal for May.

GARHWAL DISTRICT

No snowfall occurred during the period. This was below normal.

ALMORA DISTRICT

Patti Malla Danpur had reported as follows:-

Name of peak	Snowfall			Accumulation		
	March	April	May	March	April	May
Kautela	76 cm	91 cm	0	1.37 m	90 cm	61 cm
Kafani	1.01 m	91 cm	15 cm	1.06 m	90 cm	1.06 m

Name of peak	Snowfall			Accumulation		
	March	April	May	March	April	May
Bankatia	1.37 m	1.22 m	45 cm	1.62 m	1.2 m	2.13 m
Pinder	1.37 m	1.22 m	61 cm	1.6[illegible] m	1.4 m	2.13 m
Nanda Devi	1.52 m	1.37 m	91 cm	1.57 m	1.5 m	2.44 m
Sunderdhunga	1.62 m	1.32 m	61 cm	1.57 m	1.5 m	2.13 m

The snowfall was normal during the period.

NAINI TAL DISTRICT

Mukteswar-Kumaon (2310 m.)

In March on 20th moderate sleet (rain plus snow) occurred. The depth of snow was negligible. In April and May no snow fell. The snowfall was below normal in March and normal in April and May.

Nainital (1953 m.)

'Nil' snowfall was reported in March. Reports for April and May were not received.

DEHRA DUN DISTRICT

Mussoorie (2042 m.)

Snow fell on surrounding peaks on 19th and 20th of March; but the amount of snow was not reported.

Southwest Monsoon Period - June to September

June — July

I — JAMMU AND KASHMIR

SRINAGAR DISTRICT

Srinagar (1585 m.)

There was no snowfall at the station in June and July. Snow accumulation on the peaks and passes was also very meagre.

The snowfall was below normal for June and normal for July.

BARAMULLA DISTRICT

Gulmarg (2652 m.)

No snow fell in June and July. Accumulation on Afarwat and Handibal tops was about 30 cm.

The snowfall was below normal during both the months.

DODA DISTRICT

Patni Top - Batote (2033 m.)

There was neither snowfall nor accumulation on the mountains in both June and July. It was normal.

LADAK DISTRICT

Leh (3514 m.)

No snow fell in June. Accumulation however was about 60 cm on the passes. Report for July was not received.

The snowfall was normal for June.

ANANTNAG DISTRICT

Qazigund (1690 m.)

No snow fell during June and July, nor was snow accumulation observed.

II - PUNJAB AND HIMACHAL PRADESH

CHAMBA DISTRICT

Only two of the raingauge stations viz. Tissa and Kilar reported both snowfall and an accumulation of about 60 cm. on well known passes such as Sach pass. This was reported as more than the last year's.

Dalhousie (1959 m.)

No snow fell during the period.

Bharmaur Range - Bharmaur (2155 m.)

Snowfall reported for the period was 'nil'. Snow accumulation was 60 to 90 cm on passes of Kugti, Chabhia and Kalichho.

This was below normal and normal for June and July respectively.

MAHASU DISTRICT

Chopal (2342 m.)

No snow fell during the period.

KINNAR DISTRICT

Kilba Range

Kilba (1829 m.) and Sangla (2591 m.)

No snowfall was reported for the period. This was normal.

Pooh Range

Namgia, Giabong and Pooh did not report snowfall during the period.

SIMLA DISTRICT

Simla (2202 m.)

No snowfall occurred during June-July.

III - UTTAR PRADESH

TEHRI-GARHWAL DISTRICT

District officer's report gave no fall of snow throughout the district for both June and July.

Mukhim (observatory)(1981 m.) also reported no snowfall during the period.

This was normal for the months.

GARHWAL DISTRICT

No snowfall was reported to have occurred in the district for the period. This was below normal.

ALMORA DISTRICT

Patti Malla Danpur

Snowfall and accumulations as reported by the Patwari was as under:-

Peak	Snowfall		Accumulation	
	June	July	June	July
Kautela	0	0	0	0
Kafani	30 cm	0	91 cm	60 cm
Bankatia	60 cm	45 cm	1.8 m	1.7 m
Pinder	76 cm	61 cm	1.8 m	1.8 m
Nanda Devi	1.1 m	91 cm	2.1 m	2.3 m
Sunderdhunga	60 cm	45 cm	1.8 m	1.7 m

The snowfall was much above normal in June and below normal in July.

NAINITAL DISTRICT

Mukteswar (Kumaon)(2310 m)

No snow fell during the period.

August - September

I - JAMMU AND KASHMIR

SRINAGAR DISTRICT

Srinagar (1585 m.)

No snowfall occurred during the period. Snow accumulation was lowest for the season.

The snowfall was normal for August and much below normal for September.

BARAMULLA DISTRICT

Gulmarg (2652 m.)

There were snowfalls on 30th August and again on 19th and 28th September on the nearby Handibal and Apharwat mountain tops. Some small patches of snow were visible on these mountain peaks and passes. Total amounts of precipitation reported were 114.1 mm and 14.2 mm in August and September respectively.

The snowfall in August was much above normal, while that in September was much below normal.

DODA DISTRICT

Patnitop (Batote)(2033 m.)

No snowfall was observed during the period; nor was snow accumulation seen on the mountains. This was normal.

LADAKH DISTRICT

Leh (3514 m.)

Neither snowfall nor snow accumulation noticed during both the months. This was normal.

ANANTNAG DISTRICT

Qazigund (1690 m.)

Snowfall occurred on a day each in August and September on surrounding mountain peaks. Snow accumulation was also observed.

II - PUNJAB AND HIMACHAL PRADESH

CHAMBA DISTRICT

Tissa (1570 m) and Kilar (2564 m) reported only snow accumulation on passes such as Sach to a depth of 60 cm in these months. It was reported as more than that accumulated last year.

Bharmaur Range

About 1 m. of snow accumulation was reported on the passes of Kugati, Chabia and Kalichho in September. No snow fell in August.

MAHASU DISTRICT

Chopal (2342 m.)

There was no snowfall during the period.

KINNAUR DISTRICT

Kilba Range

Kilba (1829 m.) and Sangla (2591 m.)

No snowfall was reported during the period.

Pooh Range

Pooh, Namgia and Giabong, in this range, reported no snowfall during the period.

SIMLA DISTRICT

Simla (2202 m.)

No snow fell during the period.

III - UTTAR PRADESH

TEHRI-GARHWAL DISTRICT

No snow occurred during August and September in the district. This was normal for the months.

Mukhim observatory in the district also reported 'Nil' snow at the station during these months.

ALMORA DISTRICT

Malla Danpur

The Patwari reported snowfall of his patti as follows:-

Name of peak	Snowfall (cm)		Accumulation (m)	
	Aug.	Sept.	Aug.	Sept.
Kautela	0	0	0	0
Kafini	0	45	0.9	1.1
Bankatia	15	91	1.5	2.0
Pinder	45	76	2.0	2.2
Nanda Devi	76	122	2.6	3.2
Sunderdhunga	15	60	1.8	2.0

The snowfall was much below normal for August and above normal for September.

NAINI TAL DISTRICT

Mukteswar (2310 m.)

There was a 'nil' report for the period.

Post Monsoon Period - October-December

I — JAMMU AND KASHMIR

SRINAGAR DISTRICT

Srinagar (1585 m.)

The snowfall was limited to high peaks and passes in October. This was below normal. Snow accumulation was estimated at not less than 1.5 to 3.0 m. on the mountain peaks, with snow line at about 3050 m.

It snowed on 2 days and the total precipitation recorded was 33.6 mm in November. It was above normal. The snow line remained at about 3050 m.

December recorded several snowfalls total precipitation being 38.2 mm. The snowfall was normal. Accumulation of snow on passes and peaks was reported less than normal.

BARAMULLA DISTRICT

Gulmarg (2652 m.)

There was snow on 6th, 7th, 9th, 14th and 29th to 31st of October at the station and around, and on Handibal and Afharwat mountains on 3rd, 4th, 8th, 13th and 15th of this month. The total precipitation was reported as 92.5 mm. It was much above normal.

In November five snowfalls on 1st, 2nd, 10th, 11th and 12th were observed at the station as also on Handibal and Afarwat mountains. Total precipitation was 57.9 mm. It was above normal.

Ten snowfalls viz. on 6th, 10th to 14th, 24th-25th and 30th-31st, December were recorded in the whole area including the valley and mountains, and the total precipitation of 76.2 mm. It was normal.

DODA DISTRICT

Patnitop (Batote)(2033 m.)

Neither a snowfall nor any accumulation on mountains was reported in October. It was normal.

Sansar and Narota ranges, Ensin Dar and Doda hills received snow on 2nd November, whereas accumulation was present only on Narota and Sansar peaks.

11th, 23rd and 28th of December witnessed snowfall on Pirpanchal and Sansar ranges, Doda and Narote peaks and Patnitop. Snow accumulation was present on Narote-Sansar peaks, Doda hills and Patnitop.

LADAKH DISTRICT

Leh (3514 m.)

There was neither snow nor accumulation in October and November. This was much below normal for the months.

In December, however, there was 10.2 cm of both snow and accumulation. It was also much below normal.

Khangral

Snow occurred three times in December. The amounts were 15.2 cm at the station, 61.0 cm at Nomikala and 91.0 cm at Fotula. This was normal.

Reports for October and November were not received.

ANANTNAG DISTRICT

Qazigund (1690 m.)

Snow fell on 25th and 31st of December with light to moderate intensity. There was about 79 cm of snow accumulation in the valley.

The snowfall was below normal.

Snowfall reports were not received for October and November.

II - PUNJAB AND HIMACHAL PRADESH

CHAMBA DISTRICT

Snowfall information from various stations was as follows:-

Name of station	Dates of occurrence	Depth of snowfall at station	Depth of snowfall on well-known peaks/passes	Lowest height of snow line in metres.
		October		
Bharmaur	Nil	-	91 cm - 1.5 m	-
Tissa	-	-	60 cm	2740
Kilar	7 and 8	15.2 cm	1.2 m.	2440
		November		
Bhandal	-	-	60 cm.	-
Chowari	-	-	50 cm.	-
Kala Top	1	2.5 cm.	30 cm.	2130

Name of station	Dates of occurrence	Depth of snowfall at station	Depth of snowfall on well-known peaks/passes	Lowest height of snow line in metres.
		November (contd.)		
Bharmaur	2	2.5 cm	1.5 m	2130
Tissa	-	-	1.5 m	2740
Kilar	1 and 2	30 cm	1.5 m	2560
		December		
Chamba	25 and 26	12.7 cm	1.5 m	910
Bhandal	12,24,25, 26 and 31	1.1 m	2.1 m	1520
Chowari	-	-	1.5 m	1220
Bathri	-	-	1.5 m	1220
Kala Top	11,23,24, 25,30 and 31	2.3 m.	1.8 m.	2130
Bharmaur	12,24,25 and 26	1.2 m.	2.1 m	2130
Tissa	12,24 and 25	35.0 cm	2.1 m	1520
Kilar	11,12,25 and 26	45.7 cm	1.8 m	2440

Snow accumulation in metres

Name of Pass	October	November	December
Sach	1.2 m	1.5 m	2.1 m
Drati	90 cm	1.5 m	2.1 m
Kalichho	1.2 m	1.5 m	2.1 m
Padhri	-	60 cm	1.8 m
Basodan	-	1.5 m	1.8 m
Chobhia	1.5 m	1.5 m	2.0 m
Kugti	1.5 m	1.5 m	2.0 m

The snowfall was below normal for the period.

Upper Chamba Range

Snowfall and snow accumulation on the highest peaks of the range were reported as under:-

Peak	Snowfall			Accumulation		
	October	November	December	October	November	December
Kankote	15 cm	31 cm	3.7 m	20 cm	25 cm	3.3 m
Sabrew	15 cm	31 cm	3.7 m	15 cm	20 cm	3.7 m
Baliani	15 cm	31 cm	3.7 m	25 cm	31 cm	3.7 m

The snowfall was reported as in the form of hail.

The snowfall was normal for October and much above normal for November and December.

Dalhousie Range

Reports for October and November were not received.

In December, two snow storms effected the area. The snowfall due to the first storm confined to heights of 2130 m and above while that due to the second storm confined to heights above 1370 m.

Depths of snow and its accumulation were 1.8 m and 2.4 m respectively on the highest peak, Pulani Devi.

The snowfall was above normal in December.

MAHASU DISTRICT

Chopal (2342 m.)

No snow fell in October and November. Snowfall occurred on 26th and 27th December, their depths being 15.2 cm and 45.7 cm respectively.

The total accumulation of snow on the Chur Dhar peak was 1.5 m.

The snowfall was much above normal in December.

Solan (1530 m.)

No snowfall occurred in November. The station recorded 38.1 cm in December and heavy snowfall was observed on the mountain peaks.

The snowfall was much above normal for December.

SIMLA DISTRICT

Simla (2202 m.)

No snowfall was reported for October and November. Report for December was not received.

KINNAR DISTRICT

Kilba and Pooh Ranges

Name of station	Snowfall			Remarks
	October	November	December	
Kilba Range				Much below normal for October and November and much above normal for December.
Kilba (1829 m.)	0	0	30 cm	
Sangla (2591 m.)	0	0	48 cm	

Name of station	Snowfall			Remarks
	October	November	December	
Pooh Range				--
Pooh	0	0	19.2 mm	
Namgia	0	0	23.5 mm	
Giabang	0	0	20 cm	

III - UTTAR PRADESH

TEHRI-GARHWAL DISTRICT

There was no snowfall in October. Report for November was not received. The first snowfall occurred in December on 25th and then on 26th and 27th mainly on Surkanda, Nagtihha, Danolti, Bungdwar and Tuk peaks. Total snowfall was 50.8 cm. The snowline descended to 1680 m. It was normal in October and much below normal in December. Snow accumulation in December was also of the similar order.

Mukhim (1931 m.)

There was no snowfall in October and November. In December snow fell on the 25-26th night, the depth reported being about a metre and the area covered about 10 km.

The December snow was below normal.

ALMORA DISTRICT

The snowfall as reported by the Patwari of Malla Danpur is summarised below:-

Name of peak	Snowfall			Snow accumulation		
	Oct.	Nov.	Dec.	Oct.	Nov.	Dec.
	(In metres)					
Kautela	0.3	0.3	1.8	0	0	1.1
Kafini	1.4	1.1	2.0	1.2	1.4	1.4
Bankatia	1.1	1.2	2.7	2.1	2.3	2.6
Pinder	1.1	1.1	2.7	3.4	3.0	2.9
Nanda Devi	1.5	1.5	3.0	2.7	3.7	4.0
Sunderdhunga	0.9	1.1	3.0	2.1	2.4	2.7

The snowfall was above normal in October, normal in November and much above normal in December.

NAINITAL DISTRICT

Mukteswar (2310 m.)

There was no snowfall in October and November. There was snowfall

on the 26th of December. The depth reported was about 7.6 cm. Surrounding high peaks such as Nainital, Bhowali, Ramgarh also received snow.

The snowfall was below normal in December.

SUMMARY

Winter Period - January and February

The snowfall was slightly above normal during the season in all the snowfall regions viz. Jammu-Kashmir, Punjab, Himachal Pradesh and Uttar Pradesh.

Premonsoon Period - March to May

While the snowfall had been normal in Jammu-Kashmir and Punjab and Himachal Pradesh, it was slightly below normal in Uttar Pradesh.

Monsoon Period - June to September

June-July : Most of the places either reported 'nil' snowfall or confined to higher regions only. However based on available reports the snowfall may be said to be slightly below normal in Jammu & Kashmir and Uttar Pradesh, and normal in Punjab and Himachal Pradesh.

August-September : Mostly 'nil' reports of snowfall were received especially from Punjab and Himachal Pradesh. The snowfall in Jammu & Kashmir and Uttar Pradesh was normal.

Post-monsoon Period - October to December

The snowfall was normal in all the regions viz. Jammu & Kashmir, Punjab, Himachal Pradesh and Uttar Pradesh.

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N.B. - It is not possible to adopt a single classification of seasons which will be satisfactory for the whole of India. The classification adopted in this publication is devised from the point of view of rainfall in the country.